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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,627	03/24/2004	Nui Chong	M-15338 US	6086

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EXAMINER

DANG, ROBERT TRONG

ART UNIT	PAPER NUMBER
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2838

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/808,627

Applicant(s)

CHONG ET AL.

Examiner

Robert T. Dang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/24/2004</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "different diffused region must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

1. Claims 1-2, 4, 5, 10-11, 13, and 17 are objected to because of the following informalities: For claims 1, 11, and 17, the word "cascode" is misspelled and should be corrected to "cascade". For claims 2, 5, 10, 13, and 17, there is no description to what the "reference voltage line" means in the specification. For examination purposes, the examiner will interpret the "reference voltage line" as the ground line, Vcc1, Vcc2, or contact pad. For claim 4, the claimed subject matter of "different diffusion regions" is not shown on the drawings. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-5, 8-14, 16-20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Duvvury (6040968).

As to claims 1 and 11, Duvvury discloses in figure 3A, a circuit comprising: a diode string (D_1 & D_2) coupled to a supply voltage line; (V_{cc1}) and a transistor (M_1) coupled to the diode string and to a reference voltage line (ground), wherein the diode string and the transistor are implemented in a cascode configuration and provide electrostatic discharge protection (see col. 6, lines 20-24).

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As to claims 2, 10, and 17 Duvvury discloses in figure 3A, wherein the diode string comprises: at least a first diode (D_1) coupled between the supply voltage line and the reference voltage line and adapted to provide electrostatic discharge protection having a first polarity; and at least a second diode (D_2) coupled to the supply voltage line and adapted to provide electrostatic discharge protection having a second polarity.

As to claims 3 and 14, Duvvury discloses in figure 3A, wherein the second diode (D_1) has at least a first terminal coupled to a drain terminal of the transistor (M_1).

As to claims 4, 12, Duvvury discloses in figure 3A, wherein the transistor and the diode string have different diffusion regions.

As to claims 5 and 13, Duvvury discloses in figure 3A, further comprising a resistor coupled between a gate terminal of the transistor (M_1) and the reference voltage line (ground), wherein the circuit provides electrostatic discharge protection for a power rail (V_{cc}) of an integrated circuit incorporating the circuit (see claim 9).

As to claim 8, Duvvury discloses in figure 3A, wherein the circuit is adapted to operate in a mixed voltage environment (see col. 6, lines 20-24).

As to claims 9, 16, and 22, Duvvury discloses in figure 3A, wherein one or more diodes within the diode string (D_1 - D_3) may be implemented as bipolar transistors.

As to claim 18, Duvvury discloses in figure 3A, wherein the at least first diode and the transistor are implemented having different diffusions.

As to claim 19, Duvvury discloses in figure 3A, further comprising operating the at least first diode, the at least second diode, and the transistor as a clamp circuit (see col. 4, lines 23-38).

As to claim 20, Duvvury discloses in figure 3A, further comprising operating the at least first diode (D_1), the at least second diode (D_2), and the transistor (M_1) as a driver to transfer data via a pad (contact pad).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 6-7, 15, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duvvury et al (6040968) in view of Applicant's Own Acknowledge Prior Art (APA).

As to claims 6, 15, and 21, Duvvury discloses in figure 3A, the supply voltage line (V_{cc}) and the diode string (D_1 - D_3). However, he does not disclose the pull-up circuit coupled between the supply voltage line and the diode string (for claim 7), wherein the pull-up circuit and the diode string are coupled to an input pad and/or an output pad, the transistor is adapted to receive a control signal at its gate terminal, and the circuit provides electrostatic discharge protection for an interface of an integrated circuit incorporating the circuit (for claims 15 & 21). APA discloses in figure 1b (prior art), pull-up circuit coupled between the supply voltage line and the diode string, wherein the pull-up circuit and the diode string are coupled to an input pad and/or an output pad, the

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transistor is adapted to receive a control signal (VCTRL 114) at its gate terminal, and the circuit provides electrostatic discharge protection for an interface of an integrated circuit incorporating the circuit. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and add a pull-up circuit in order to limit the current that can flow between Vcc and ground. The problem with some circuits is they allow too much current to flow from Vcc to GND. This causes heat to be generated, which can sometimes burn parts, wires, or even start fires.

As to claim 7, Duvvury discloses in figure 3A, wherein the circuit is adapted to operate as a driver (see col. 4, lines 61-63).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert T. Dang whose telephone number is 571-272-8326. The examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl D. Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTD


KARL EASTHOM
SUPERVISORY PATENT EXAMINER